

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

*(Attorney Docket No. 15574US02)*

In the Application of:

Rajendra Tusahr Moorti, et al.

Serial No. 10/810,462

Filed: March 26, 2004

For: Method and System for Antenna Selection  
Diversity with Dynamic Gain Control

Examiner: Charles Chiang Chow

Group Art Unit: 2618

Confirmation No. 9326

Electronically filed on:  
June 18, 2007

**APPEAL BRIEF**

Mail Stop Appeal Brief – Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This is an appeal from an Office Action dated December 18, 2006 ("Final Office Action"), in which claims 1-7, 9-17, 19-27, 29 and 30 were finally rejected and claims 8, 18 and 28 were objected to. The Applicant respectfully requests that the Board of Patent Appeals and Interferences ("Board") reverse the final rejection of claims 1-7, 9-17, 19-27, 29 and 30 of the present application. The Applicant notes that this Appeal Brief is timely filed within the period for reply that ends on June 18, 2007.

**REAL PARTY IN INTEREST**  
**(37 C.F.R. § 41.37(c)(1)(i))**

Broadcom Corporation, a corporation organized under the laws of the state of California, and having a place of business at 5300 California Avenue, Irvine, California 92617, has acquired the entire right, title and interest in and to the invention, the application, and any and all patents to be obtained therefor, as set forth in the Assignment recorded at Reel 015594, Frame 0949 in the PTO Assignment Search room.

**RELATED APPEALS AND INTERFERENCES**  
**(37 C.F.R. § 41.37(c)(1)(ii))**

Not applicable.

**STATUS OF THE CLAIMS**  
**(37 C.F.R. § 41.37(c)(1)(iii))**

Claims 1-7, 9-17, 19-27, 29 and 30 were finally rejected and claims 8, 18 and 28 were objected to. Pending claims 1-30 are the subject of this appeal.

The present application includes claims 1-30, which are pending in the present application.<sup>1</sup> Claims 8, 18 and 28 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form.<sup>2</sup> Claims 1, 9, 11, 19, 21 and 29 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Wright,

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<sup>1</sup> See Present Application (“Application”) at pages 19-23.

<sup>2</sup> See the Final Office Action at page 10, item 8.

et al. (U.S. Patent 5,648,992, hereinafter Wright).<sup>3</sup> Claims 2, 4, 6, 12, 14, 16, 22, 24 and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wright in view of Suzuki (U.S. Patent No. 5,787,122, hereinafter Suzuki).<sup>4</sup> Claims 3, 7, 13, 17, 23 and 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wright in view of Suzuki, and further in view of Lyons et al. (U.S. Patent No. 6,922,549 B2, hereinafter Lyons).<sup>5,6</sup> Claims 5, 15 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wright in view of Suzuki and further in view of Balachandran et al. (U.S. Patent No. 5,481,571, hereinafter Balachandran).<sup>7</sup> Claims 10, 20 and 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wright in view of Suzuki and Todd (U.S. Patent No. 6,002,672).<sup>8</sup> The Applicant identifies claims 1-7, 9-17, 19-27, 29 and 30 as the claims that are being appealed. The text of the pending claims is provided in the Claims Appendix.

**STATUS OF AMENDMENTS**  
**(37 C.F.R. § 41.37(c)(1)(iv))**

The Applicant has not amended any claims subsequent to the final rejection of claims 1-7, 9-17, 19-27, 29 and 30 mailed on December 18, 2006.

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<sup>3</sup> See *id.* at page 2, item 2.

<sup>4</sup> See *id.* at page 6, item 3.

<sup>5</sup> See *id.* at page 7, item 4.

<sup>6</sup> See *id.* at page 9, item 6.

<sup>7</sup> See *id.* at page 8, item 5.

<sup>8</sup> See *id.* at page 9, item 7.

**SUMMARY OF CLAIMED SUBJECT MATTER**  
**(37 C.F.R. § 41.37(c)(1)(v))**

The invention of claim 1 is illustratively described in the Specification of the present application at, for example, paragraphs [10]. Certain embodiments of the invention may be found in a method and system for antenna selection diversity with dynamic gain control.<sup>9</sup> Wireless communication systems may utilize receivers with multiple antennas to enhance the performance and robustness of the receiver and to increase the reliability of the communications link.<sup>10</sup> Certain aspects of the method may comprise dwelling on at least one of several antennas in a receiver system in order to select a portion of those antennas for signal processing, determining a gain, and determining a signal quality metric for the dwelled-on antennas.<sup>11</sup> The power may be an estimated received power or it may be a received power.<sup>12</sup> Selecting the portion of antennas that may be used for signal processing may be based on the gain, the estimated signal quality metric, and/or the received signal quality metric of the dwelled-on antennas.<sup>13</sup>

The inventions of claims 2-10 are illustratively described in the Specification of the present application at, for example, paragraph [11]. A starting antenna may be selected from the antennas in the receiver system based on a predetermined criteria, random selection, and/or on information of which dwelled-on antennas or portion of

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<sup>9</sup> See Application at page 4, lines 2-3.

<sup>10</sup> See *id.* at page 4, lines 3-4.

<sup>11</sup> See *id.* at page 4, lines 6-9.

<sup>12</sup> See *id.* at page 4, lines 9-10.

<sup>13</sup> See *id.* at page 4, lines 10-12.

dwelled-on have been selected for signal processing in the past.<sup>14</sup> A starting gain for the starting antenna may be determined by using an automatic gain control.<sup>15</sup> Other antennas in the receiver system may be selected for dwelling based on a predetermined criteria.<sup>16</sup> For each of the dwelled-on antennas, a gain may be determined dynamically based on the gain, the signal quality metrics, and/or on at least one of the power coupling parameters that may be measured between the antenna switch outputs in the receiver.<sup>17</sup> The signal quality metrics may be an estimated received power, a received power, a signal-to-noise ratio, a bit error rate, a packet error rate, a propagation channel characteristic, an/or a channel interference.<sup>18</sup> Selecting a portion of the dwelled-on antennas for signal processing in the current information frame may be based on a comparison against a specified range of levels for at least one signal quality metric.<sup>19</sup>

The invention of claim 11 is illustratively described in the Specification of the present application at, for example, paragraph [12]. Another embodiment of the invention may provide a machine-readable storage, having stored thereon, a computer program having at least one code section executable by a machine, thereby causing the machine to perform the steps as described above for a method and system for antenna selection diversity with dynamic gain control.<sup>20</sup>

Claims 12-20 are dependent upon claim 11.

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<sup>14</sup> See *id.* at page 4, lines 13-16.

<sup>15</sup> See *id.* at page 4, lines 16-17.

<sup>16</sup> See *id.* at page 4, lines 17-18.

<sup>17</sup> See *id.* at page 4, lines 18-21.

<sup>18</sup> See *id.* at page 4, lines 21-23.

<sup>19</sup> See *id.* at page 4, lines 24-26.

The invention of claim 21 is illustratively described in the Specification of the present application at, for example, paragraph [13]. Certain aspects of the system may comprise a processor that dwells on at least one several antennas in a receiver system in order to select a portion of those antennas for signal processing.<sup>21</sup> The processor determines a gain and a signal quality metric for the dwelled-on antennas.<sup>22</sup> The signal quality metric may be an estimated signal quality metric or it may be a true signal quality metric.<sup>23</sup> The processor selects the portion of antennas that may be used for signal processing based on the gain, the estimated signal quality metric, and/or the received signal quality metric of the dwelled-on antennas.<sup>24</sup>

The invention of claims 22-26 are illustratively described in the Specification of the present application at, for example, paragraph [14]. The processor may select a starting antenna from the antennas in the receiver system based on a predetermined criteria, random selection, and/or on information of which dwelled-on antennas or portion of dwelled-on have been selected for signal processing in the past.<sup>25</sup> The processor may determine a starting gain for the starting antenna by using an automatic gain control.<sup>26</sup>

The invention of claims 27-30 are illustratively described in the Specification of the present application at, for example, paragraph [15]. The processor may select the

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<sup>20</sup> See *id.* at page 4, lines 27-28, page 5, lines 1-2.

<sup>21</sup> See *id.* at page 5, lines 3-5.

<sup>22</sup> See *id.* at page 5, lines 5-6.

<sup>23</sup> See *id.* at page 5, lines 6-7.

<sup>24</sup> See *id.* at page 5, lines 7-10.

<sup>25</sup> See *id.* at page 5, lines 11-14.

dwelling antennas in the receiver system based on a predetermined criteria.<sup>27</sup> For each of the dwelled-on antennas, the processor may determine a gain dynamically based on the gain, the estimated received power, and/or the received power of other dwelled-on antennas and/or on at least one of the power coupling parameters that may be measured between the antennas in the receiver.<sup>28</sup> The processor may select a portion of the dwelled-on antennas for signal processing in the current information frame based on a comparison against a specified range of levels for at least one signal quality metric, and may select the dwelling antennas in the receiver system based on a predetermined criteria.<sup>29</sup> For each of the dwelled-on antennas, the processor may determine a gain dynamically based on the gain, the estimated received power, and/or the received power of other dwelled-on antennas and/or on at least one of the power coupling parameters that may be measured between the antennas in the receiver.<sup>30</sup> The processor may select a portion of the dwelled-on antennas for signal processing in the current information frame based on a comparison against a specified range of levels for at least one signal quality metric.<sup>31</sup>

**GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**  
(37 C.F.R. § 41.37(c)(1)(vi))

Claims 1, 9, 11, 19, 21 and 29 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Wright. Claims 2, 4, 6, 12, 14, 16, 22, 24 and 26 stand rejected under 35

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<sup>26</sup> See *id.* at page 5, lines 14-15.

<sup>27</sup> See *id.* at page 5, lines 16-17.

<sup>28</sup> See *id.* at page 5, lines 17-20.

<sup>29</sup> See *id.* at page 5, lines 20-24.

<sup>30</sup> See *id.* at page 5, lines 24-28.

U.S.C. § 103(a) as being unpatentable over Wright in view of Suzuki. Claims 3, 7, 13, 17, 23 and 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wright in view of Suzuki, and further in view of Lyons. Claims 5, 15 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wright in view of Suzuki and further in view of Balachandran. Claims 10, 20 and 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wright in view of Suzuki and Todd.

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<sup>31</sup> See *id.* at page 5, line 28, page 6, lines 1-2.

**ARGUMENT**  
**(37 C.F.R. § 41.37(c)(1)(vii))**

The Final Office Action rejected claims 1, 9, 11, 19, 21 and 29 under 35 U.S.C. § 102(e) as being anticipated by Wright. According to the Manual of Patent Examining Procedure (MPEP) § 2131, a claim is anticipated only if each and every element in the claim is found in a single prior art reference.<sup>32</sup> Furthermore, the single prior art reference must show an identical invention in as complete detail as set forth in the claim.<sup>33</sup> The Final Office Action fails to establish that Wright describes, teaches or suggests every element within these claims.

**I. Rejection of Independent Claims 1, 9, 11, 19, 21 and 29 under 35 U.S.C. § 102(e)**

The Applicant first turns to the rejection of claims 1, 11, and 21 under 35 U.S.C. 102(e) as being anticipated by Wright.

**A. Rejection of Independent Claim 1 under 35 U.S.C. § 102 (e)**

**Wright Does Not Anticipate Claims 1, 11, and 21**

With regard to the rejection of independent claim 1 under Wright, the Applicant submits that Wright does not disclose or suggest at least the limitation of “selecting for signal processing a portion of said dwelled-on at least one of a plurality of antennas **based on said determined gain and said determined at least one of a plurality of**

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<sup>32</sup> See *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

<sup>33</sup> See *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

**signal quality metrics** from said dwelled-on at least one of a plurality of antennas," as recited by the Applicant in independent claim 1 (emphasis added).

The Final Office Action refers for support to Figures 3 and 4 of Wright, as well as column 4, line 65 – column 5, line 21 of Wright.<sup>34</sup> The Applicant respectfully disagrees. Wright discloses the following:

*Switch 14 couples either the first antenna 10 or the second antenna 12 to the receiver electronics depending upon the diversity control indicator 29 which is an input to switch 14. A signal transmitted from a portable handset is received by the selected antenna and passed to the gain control switch 18 by switch 14. Depending upon the gain control indicator 28, *the gain control switch 18 selects one of three gain paths 15, 19 or 17. In particular switch 18 is configured to receive the gain control indicator 28 and select either the gain path 15, the no gain path 19, or the attenuation path 17.*<sup>35</sup> (emphasis added)*

In this regard, Wright discloses that the switch 14 selects between antenna 10 or antenna 12 based only on diversity control indicator 29. The diversity control indicator, however, is based on the received signal data, frequency variance, timing variance and RSSI.<sup>36</sup> Furthermore, gain information within the base station receiver structure disclosed by Wright in Figure 3 is relevant only with regard to switch 18, i.e., only after an antenna has been selected by switch 14. For example, based on the gain control signal 28, the signal from the selected antenna is amplified, attenuated, or left unchanged as it passes through gain paths 15, 17, or 19, respectively.<sup>37</sup> Therefore, Wright does not disclose or suggest the limitation of "selecting for signal processing a

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<sup>34</sup> See Final Office Action at page 2.

<sup>35</sup> See Wright at col. 4, lines 21-31.

<sup>36</sup> See *id.* at col. 4, lines 65-67.

portion of said dwelled-on at least one of a plurality of antennas based on said determined gain and said determined at least one of a plurality of signal quality metrics from said dwelled-on at least one of a plurality of antennas," as recited by the Applicant in independent claim 1 (emphasis added).

Accordingly, independent claim 1 is not anticipated by Wright and is allowable. Independent claims 11 and 21 are similar in many respects to the method disclosed in independent claim 1. Therefore, the Applicant submits that independent claims 11 and 21 are also allowable over the references cited in the Office Action at least for the reasons stated above with regard to claim 1.

#### **B. Rejection of Dependent Claims 9, 19, and 29**

Based on at least the foregoing, the Applicant believes the rejection of independent claims 1, 11, and 21 under 35 U.S.C. § 102(e) as being anticipated by Wright has been overcome and request that the rejection be withdrawn. Additionally, claims 9, 19, and 29 depend from independent claims 1, 11, and 21, respectively, and are, consequently, also respectfully submitted to be allowable.

#### **II. Rejection of Claims 2-7, 12-17 and 22-27 under 35 U.S.C. § 103(a)**

The Final Office Action rejects claims 2, 4, 6, 12, 14, 16, 22, 24 and 26 under 35 U.S.C. § 103(a) as being unpatentable over Wright in view of Suzuki. The Final Office Action rejects claims 3, 7, 13, 17, 23 and 27 under 35 U.S.C. § 103(a) as being unpatentable over Wright in view of Suzuki, and further in view of Lyons. The Final

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<sup>37</sup> See *id.* at Figure 3 and col. 4, lines 21-31.

Office Action rejects claims 5, 15 and 25 under 35 U.S.C. § 103(a) as being unpatentable over Wright in view of Suzuki and further in view of Balachandran. The Final Office Action rejects claims 10, 20 and 30 under 35 U.S.C. § 103(a) as being unpatentable over Wright in view of Suzuki and Todd.

The combination Wright and Suzuki, however, does not describe, teach or suggest every recited limitation within claims 2, 4, 6, 12, 14, 16, 22, 24 and 26. The combination of Wright, Suzuki and Lyons, however, does not describe, teach or suggest every recited limitation within claims 3, 7, 13, 17, 23 and 27. The combination of Wright, Suzuki and Balachandran, however, does not describe, teach or suggest every recited limitation within claims 5, 15 and 25. Furthermore, the combination of Wright, Suzuki and Todd, however, does not describe, teach or suggest every recited limitation within claims 10, 20 and 30.

The burden of establishing a *prima facie* case of obviousness resides with the Patent and Trademark Office.<sup>38</sup> The Final Office Action fails to establish a *prima facie* case of obviousness because it does not specifically point to every limitation of the rejected claims 2, 4, 6, 12, 14, 16, 22, 24 and 26 in Wright and Suzuki. The Final Office Action fails to establish a *prima facie* case of obviousness because it does not specifically point to every limitation of the rejected claims 3, 7, 13, 17, 23 and 27 in Wright, Suzuki and Lyons. The Final Office Action fails to establish a *prima facie* case of obviousness because it does not specifically point to every limitation of the rejected claims 5, 15 and 25 in Wright, Suzuki and Balachandran. The Final Office Action fails to establish a *prima facie* case of

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<sup>38</sup> See *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984)

obviousness because it does not specifically point to every limitation of the rejected claims 10, 20 and 30 in Wright, Suzuki and Todd.

With regard to an obviousness rejection, the Manual of Patent Examining Procedure (MPEP) states that in order for a *prima facie* case of obviousness to be established, three basic criteria must be met.<sup>39</sup> First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, *the prior art reference (or references when combined) must teach or suggest all the claim limitations*. Further, MPEP § 2143.01 states that “the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art suggests the desirability of the combination,” and that “although a prior art device ‘may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so’”<sup>40</sup>. Moreover, MPEP § 2143.01 also states that the level of ordinary skill in the art cannot be relied upon to provide the suggestion.”<sup>41</sup>

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<sup>39</sup> quoting *In re Warner*, 379 F.2d 1011, 1016, 154 USPQ 173, 177 (CCPA 1967).

<sup>40</sup> See MPEP § 2142.

<sup>41</sup> See *In re Mills*, 916 F.2d 680, 16 USPQ 2d 1430 (Fed. Cir. 1990).

<sup>41</sup> *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ 2d 1161 (Fed. Cir. 1999).

**A. Rejection of Claims 2, 4, 6, 12, 14, 16, 22, 24 and 26 under 35 U.S.C. § 103(a)**

The Applicant first turns to the rejection of claims 2, 4, 6, 12, 14, 16, 22, 24 and 26 under 35 U.S.C. § 103(a) as being unpatentable over Wright and Suzuki.

**i. The Combination of Wright and Suzuki Does Not Disclose or Suggest Selecting a Starting Antenna**

The Final Office Action concedes that Wright "fails to teach selecting of a starting antenna."<sup>42</sup> In order to overcome this deficiency, the Office Action cites Suzuki at column 9, lines 13-26 and Fig. 10. The combination of Wright and Suzuki does not teach "selecting a starting antenna from said at least one of a plurality of antennas" as is recited in the claims 2, 12 and 22. Instead, the combination of Wright and Suzuki teaches only a "determined sequential order" but does not teach the determined sequential order starting from a determined starting antenna.<sup>43</sup>

Additionally, the Applicant respectfully submits that Suzuki does not teach "the control unit 78 of a receiving station is obviously having the code for selecting a (sic) antenna based on the previously determined sequential order" as is asserted in the Final Office Action.<sup>44</sup>

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<sup>42</sup> See the Final Office Action at pages 6-7.

<sup>43</sup> See Suzuki at column 9, lines 21-22.

<sup>44</sup> See the Final Office Action at pages 6-7.

**ii. The Combination of Wright and Suzuki Does Not Disclose or Suggest Selecting a Starting Antenna Based on Random Selection**

The Final Office Action concedes that Wright "fails to teach selecting of a starting antenna."<sup>45</sup> In order to overcome this deficiency, the Office Action cites Suzuki at column 9, lines 13-26 and Fig. 10. The combination of Wright and Suzuki does not teach "selecting said starting antenna based on random selection" as is recited in the claims 4, 14 and 24. Instead, the combination of Wright and Suzuki teaches only that the antennas may be "randomly selected based on data generated at random" but does not teach the starting antenna is selected by random selection.<sup>46</sup>

Additionally, the Applicant respectfully submits that Suzuki does not teach "the control unit 78 of a receiving station is obviously having the code for selecting a (sic) antenna based on random selection" as is asserted in the Final Office Action.<sup>47</sup>

**iii. The Combination of Wright and Suzuki Does Not Disclose or Suggest Determining a Starting Gain for said Starting Antenna using an Automatic Gain Control**

The Final Office Action concedes that Wright "fails to teach selecting of a starting antenna."<sup>48</sup> In order to overcome this deficiency, the Office Action cites Suzuki at column 9, lines 13-26 and Fig. 10. The Applicant respectfully submits that the

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<sup>45</sup> See the Final Office Action at page 7.

<sup>46</sup> See Suzuki at column 9, lines 22-24.

<sup>47</sup> See the Final Office Action at page 7.

<sup>48</sup> See the Final Office Action at page 7.

combination of Wright and Suzuki does not obviously teach, disclose or suggest "determining a starting gain for said starting antenna using an automatic gain control" as is recited in the claims 6, 16 and 26. Instead, the Final Office Action asserts that the combination of Wright and Suzuki teaches selecting a starting antenna.<sup>49</sup> While the Applicant respectfully disagrees with this assertion for at least the reasons stated above, the Applicant further asserts that the Examiner has not established a *prima facie* case of obviousness in rejecting claims 6, 16 and 26.

For at least the reasons stated above, the Applicant respectfully submits that the Final Office Action has not established a *prima facie* case of obviousness with respect to claims 2, 4, 6, 12, 14, 16, 22, 24 and 26.

For at least the reasons stated above, the Applicant disagrees with the assertion in the Final Office Action that Wright teaches the limitations of independent claims 1, 11 and 21. Therefore, the Applicant respectfully submits that the combination of Wright, Suzuki and Todd does not teach all of the limitations recited in the claims 2, 4 and 6, 12, 14 and 16, and 22, 24 and 26, which depend upon the independent claims 1, 11 and 21 respectively.

#### **B. Rejection of Claims 3, 7, 13, 17, 23 and 27 under 35 U.S.C. § 103(a)**

The Applicant turns to the rejection of claims 3, 7, 13, 17, 23 and 27 under 35 U.S.C. § 103(a) as being unpatentable over Wright, Suzuki and Lyons.

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<sup>49</sup> See *ibid.*

**i. The Combination of Wright, Suzuki and Lyons Does Not Disclose or Suggest Selecting said Starting Antenna Based on a Predetermined Criteria**

The Final Office Action concedes that Wright "fails to teach the selecting a (sic) starting antenna" and that "Wright and Suzuki fail to teach the selecting of an antenna based on a predetermined criteria."<sup>50</sup> In order to overcome this deficiency, the Office Action cites Lyons at column 14, lines 32-44 and at column 16, lines 4-40. The combination of Wright, Suzuki and Lyons does not teach "selecting said starting antenna based on a predetermined criteria" as is recited in the claims 3, 13 and 23. Instead, the combination of Wright, Suzuki and Lyons teaches "the selection diversity method of the invention maintains a PER less than 5% for distances less than 40 feet, but the PER increases to 20% as the distance increases to 80 feet."<sup>51</sup> Since the PER would be calculated after receiving a signal, and a signal would be received after selecting an antenna, the Applicant respectfully submits that the combination of Wright, Suzuki and Lyons does not obviously teach selecting a starting antenna based on a predetermined criteria as is received in the claims 3, 13 and 23.

**ii. The Combination of Wright, Suzuki and Lyons Does Not Disclose or Suggest Selecting an Antenna Dwelling Order Based on a Predetermined Criteria**

The Final Office Action concedes that Wright "fails to teach selecting an (sic) starting antenna" and that "Wright and Suzuki fail to teach selecting an antenna dwelling

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<sup>50</sup> See the Final Office Action at pages 7-8.

<sup>51</sup> See Lyons at column 14, lines 40-43.

order based on a predetermined criteria.”<sup>52</sup> In order to overcome this deficiency, the Office Action cites Lyons at column 14, lines 32-44 and at column 16, lines 4-40. The combination of Wright, Suzuki and Lyons does not teach “selecting an antenna dwelling order based on a predetermined criteria” as is recited in the claims 7, 17 and 27. Instead, the combination of Wright, Suzuki and Lyons teaches a plurality of two-antenna diversity receivers, in which a signal is received from each receiving antenna and each received signal is evaluated and/or processed.<sup>53</sup> The Applicant respectfully submits that since the combination of Wright, Suzuki and Lyons teaches that each of the signals received from each of the receiving antennas is evaluated and/or processed, the combination does not obviously teach selecting an antenna dwelling order at all. In this regard, since the combination of Wright, Suzuki and Lyons teaches dwelling on each of the antennas. In such case, there would be no “dwelling order” because selection of a signal would occur after each of the antennas had been utilized to receive a signal, which may be subsequently evaluated and/or processed to enable the signal selection.

For at least the reasons stated above, the Applicant respectfully submits that the Final Office Action has not established a *prima facie* case of obviousness with respect to claims 3, 7, 13, 17, 23 and 27.

For at least the reasons stated above, the Applicant disagrees with the assertion in the Final Office Action that Wright teaches the limitations of independent claims 1, 11 and 21. Therefore, the Applicant respectfully submits that the combination of Wright,

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<sup>52</sup> See the Final Office Action at pages 7-8.

Suzuki and Todd does not teach all of the limitations recited in the claims 3 and 7, 13 and 17, and 23 and 27, which depend upon the independent claims 1, 11 and 21 respectively.

**C. Rejection of Claims 5, 15 and 25 under 35 U.S.C. § 103(a)**

The Applicant turns to the rejection of claims 5, 15 and 25 under 35 U.S.C. § 103(a) as being unpatentable over Wright, Suzuki and Balachandran.

**The Combination of Wright, Suzuki and Balachandran Does Not Disclose or Suggest Selecting said Starting Antenna Based on a Prior History**

The Final Office Action concedes that Wright "fails to teach selecting an (sic) starting antenna" and that "Wright and Suzuki fail to teach the antenna selection is based on prior history said selection of said portion of dwelled-on at least one of a plurality of antennas."<sup>54</sup> In order to overcome this deficiency, the Office Action cites Balachandran at column 3, lines 10-35. The combination of Wright, Suzuki and Balachandran does not teach "selecting said starting antenna based on prior history said selection of said portion of dwelled-on at least one of a plurality of antennas" as is recited in the claims 5, 15 and 25. Instead, the combination of Wright, Suzuki and Balachandran teaches "a predetermined value which is compared with the present signal strength on the selected RF circuit. Switching to another RF circuit takes place if

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<sup>53</sup> See Lyons at column 13, lines 28-67, column 14, lines 1-32 and FIGs. 2-4.

<sup>54</sup> See the Final Office Action at pages 8-9.

the present signal strength is less than the predetermined value.<sup>55</sup> The Applicant respectfully submits that since the combination of Wright, Suzuki and Balachandran teaches that the predetermined value is compared to the present signal strength, a starting antenna selection would have already occurred prior to the comparison to enable reception of the present signal utilized in the comparison. In this regard, since the combination of Wright, Suzuki and Balachandran would not obviously teach *selecting said starting antenna* based on prior history.

For at least the reasons stated above, the Applicant respectfully submits that the Final Office Action has not established a *prima facie* case of obviousness with respect to claims 5, 10 and 15.

For at least the reasons stated above, the Applicant disagrees with the assertion in the Final Office Action that Wright teaches the limitations of independent claims 1, 11 and 21. Therefore, the Applicant respectfully submits that the combination of Wright, Suzuki and Todd does not teach all of the limitations recited in the claims 5, 10 and 15, which depend upon the independent claims 1, 11 and 21 respectively.

#### **D. Rejection of Claims 10, 20 and 30 under 35 U.S.C. § 103(a)**

The Applicant turns to the rejection of claims 10, 20 and 30 under 35 U.S.C. § 103(a) as being unpatentable over Wright, Suzuki and Todd.

The Final Office Action concedes that Wright "fails to teach selecting an (sic) starting antenna" and that "Wright and Suzuki fail to teach the antenna selection based

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<sup>55</sup> See Balachandran at column 3, lines 19-23.

on meeting a specified range of values for at least one of said plurality of signal quality metrics.<sup>56</sup> In order to overcome this deficiency, the Office Action cites Todd 440 in FIG. 4b, 19-30 (column unspecified in the Final Office Action).<sup>57</sup> The Final Office Action asserts that Todd teaches antenna selection based on meeting a specified range of values.<sup>58</sup>

For at least the reasons stated above, the Applicant respectfully submits that the Final Office Action has not established a *prima facie* case of obviousness with respect to claims 10, 20 and 30.

For at least the reasons stated above, the Applicant disagrees with the assertion in the Final Office Action that Wright teaches the limitations of independent claims 1, 11 and 21. Therefore, the Applicant respectfully submits that the combination of Wright, Suzuki and Todd does not teach all of the limitations recited in the claims 10, 20 and 30, which depend upon the independent claims 1, 11 and 21 respectively.

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<sup>56</sup> See the Final Office Action at pages 9-10.

<sup>57</sup> See *ibid.* at page 10.

<sup>58</sup> See *ibid.*

## CONCLUSION

For at least the foregoing reason, the Applicant submits that claims 1, 9, 11, 19, 21 and 29 are not anticipated by Wright, claims 2, 4, 6, 12, 14, 16, 22, 24 and 26 are not obvious under Wright in view of Suzuki, claims 3, 7, 13, 17, 23 and 27 are not obvious under Wright in view of Suzuki, and further in view of Lyons, claims 5, 15 and 25 are not obvious under Wright in view of Suzuki and further in view of Balachandran and claims 10, 20 and 30 are not obvious under Wright in view of Suzuki and Todd. Reversal of the Examiner's rejection and issuance of a patent on the application are therefore requested.

The Commissioner is hereby authorized to charge \$500 (to cover the Brief on Appeal Fee) and any additional fees or credit any overpayment to the deposit account of McAndrews, Held & Malloy, Ltd., Account No. 13-0017.

Respectfully submitted,

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**CLAIMS APPENDIX**  
**(37 C.F.R. § 41.37(c)(1)(viii))**

1. A method for controlling an antenna system, the method comprising:
  - dwelling on at least one of a plurality of antennas;
  - determining a gain for said dwelled-on at least one of a plurality of antennas;
  - determining at least one of a plurality of signal quality metrics for said dwelled-on at least one of a plurality of antennas; and
  - selecting for signal processing a portion of said dwelled-on at least one of a plurality of antennas based on said determined gain and said determined at least one of a plurality of signal quality metrics from said dwelled-on at least one of a plurality of antennas.
2. The method according to claim 1, comprising selecting a starting antenna from said at least one of a plurality of antennas.
3. The method according to claim 2, comprising selecting said starting antenna based on a predetermined criteria.
4. The method according to claim 2, comprising selecting said starting antenna based on random selection.
5. The method according to claim 2, comprising selecting said starting antenna based on prior history said selection of said portion of dwelled-on at least one of a plurality of antennas.

6. The method according to claim 2, comprising determining a starting gain for said starting antenna using an automatic gain control.

7. The method according to claim 1, comprising selecting antenna dwelling order based on a predetermined criteria.

8. The method according to claim 1, comprising determining said at least one of said determined gain for said dwelled-on at least one of a plurality of antennas based on said at least one of a plurality of signal quality metrics, on at least one of a plurality of power coupling parameters, and/or a portion of said determined gain for said dwelled-on at least one of a plurality of antennas.

9. The method according to claim 1, wherein said at least one of a plurality of signal quality metrics may comprise at least one of the following: an estimated received power, a received power, a signal-to-noise ratio, a bit error rate, a packet error rate, a propagation channel characteristic, and/or a channel interference.

10. The method according to claim 1, comprising selecting said portion of said dwelled-on at least one of a plurality of antennas based on meeting a specified range of values for at least one of said plurality of signal quality metrics.

11. A machine-readable storage having stored thereon, a computer program having at least one code section for controlling an antenna system, the at least one code section being executable by a machine for causing the machine to perform steps comprising:

dwelling on at least one of a plurality of antennas;  
determining a gain for said dwelled-on at least one of a plurality of antennas;  
determining at least one of a plurality of signal quality metrics for said dwelled-on at least one of a plurality of antennas; and  
selecting for signal processing a portion of said dwelled-on at least one of a plurality of antennas based on said determined gain and said determined at least one of a plurality of powers from said dwelled-on at least one of a plurality of antennas.

12. The machine-readable storage according to claim 11, comprising code for selecting a starting antenna from said at least one of a plurality of antennas.

13. The machine-readable storage according to claim 12, comprising code for selecting said starting antenna based on a predetermined criteria.

14. The machine-readable storage according to claim 12, comprising code for selecting said starting antenna based on random selection.

15. The machine-readable storage according to claim 12, comprising code for selecting said starting antenna based on prior history said selection of said portion of dwelled-on at least one of a plurality of antennas.

16. The machine-readable storage according to claim 12, comprising code for determining a starting gain for said starting antenna using an automatic gain control.

17. The machine-readable storage according to claim 11, comprising code for selecting antenna dwelling order based on a predetermined criteria.

18. The machine-readable storage according to claim 11, comprising code for determining said at least one of said determined gain for said dwelled-on at least one of a plurality of antennas based on said at least one of a plurality of signal quality metrics, on at least one of a plurality of power coupling parameters, and/or a portion of said determined gain for said dwelled-on at least one of a plurality of antennas.

19. The machine-readable storage according to claim 11, wherein said at least one of a plurality of signal quality metrics may comprise at least one of the following: an estimated received power, a received power, a signal-to-noise ratio, a bit error rate, a packet error rate, a propagation channel characteristic, and/or a channel interference.

20. The machine-readable storage according to claim 11, comprising code for selecting said portion of said dwelled-on at least one of a plurality of antennas based on meeting a specified range of values for at least one of said plurality of signal quality metrics.

21. A system for controlling an antenna system, the system comprising:  
a processor that dwells on at least one of a plurality of antennas;  
said processor determines a gain of said dwelled-on at least one of a plurality of antennas;  
said processor determines at least one of a plurality of signal quality metrics for said dwelled-on at least one of a plurality of antennas; and

said processor selects for signal processing, a portion of said dwelled-on at least one of a plurality of antennas based on said determined gain and said determined at least one of a plurality of powers from said dwelled-on at least one of a plurality of antennas.

22. The system according to claim 21, wherein said processor selects a starting antenna from said at least one of a plurality of antennas.

23. The system according to claim 22, wherein said processor selects said starting antenna based on a predetermined criteria.

24. The system according to claim 22, wherein said processor selects said starting antenna based on random selection.

25. The system according to claim 22, wherein said processor selects said starting antenna based on prior history of said selection of said portion of dwelled-on at least one of a plurality of antennas.

26. The system according to claim 22, wherein said processor determines a starting gain for said starting antenna using an automatic gain control.

27. The system according to claim 21, wherein said processor selects antenna dwelling order based on a predetermined criteria.

28. The system according to claim 21, wherein said processor determines said at least one of said determined gain for said dwelled-on at least one of a plurality of antennas based on said at least one of a plurality of signal quality metrics, on at least one of a plurality of power coupling parameters, and/or a portion of said determined gain for said dwelled-on at least one of a plurality of antennas.

29. The system according to claim 21, wherein said at least one of a plurality of signal quality metrics may comprise at least one of the following: an estimated received power, a received power, a signal-to-noise ratio, a bit error rate, a packet error rate, a propagation channel characteristic, and/or a channel interference.

30. The system according to claim 21, wherein said processor selects said portion of said dwelled-on at least one of a plurality of antennas based on meeting a specified range of values for at least one of said plurality of signal quality metrics.

**EVIDENCE APPENDIX**  
**(37 C.F.R. § 41.37(c)(1)(ix))**

- (1) United States Patent No. 5,648,992 ("Wright"), entered into record by the Examiner in the July 13, 2006 Office Action.
- (2) United States Patent No. 5,787,122 ("Suzuki"), entered into record by the Examiner in the July 13, 2006 Office Action.
- (3) United States Patent No. 6,922,549 ("Lyons"), entered into record by the Examiner in the July 13, 2006 Office Action.
- (4) United States Patent No. 5,481,571 ("Balachandran"), entered into record by the Examiner in the July 13, 2006 Office Action.
- (5) United States Patent No. 6,002,672 ("Todd"), entered into record by the Examiner in the July 13, 2006 Office Action.

**RELATED PROCEEDINGS APPENDIX**

**(37 C.F.R. § 41.37(c)(1)(x))**

Not applicable.